

*Nodosaria Fontannesi*, Berthelin.

*Dentalina Fontannesi*, Berthelin, 1880, Mém. Soc. géol. France, sér. 3, vol. i. no. 5, p. 42, pl. ii. fig. 14.

*Nodosaria (Dentalina) Fontannesi*, Berthelin, Chapman, 1893, Journ. R. Micr. Soc. p. 593, pl. ix. fig. 15.

Rare at Swaffham.

*Nodosaria obscura*, Reuss.

*Nodosaria obscura*, Reuss, 1845, Verstein. böhm. Kreidef. pt. i. p. 26, pl. xiii. figs. 7-9.

*Nodosaria (Dentalina) obscura*, Reuss, Chapman, 1893, Journ. R. Micr. Soc. pp. 593, 594, pl. ix. fig. 16. (N.B.—The numbers 15 and 16 of the preceding and this species should be transposed on pl. ix.)

Two exceptionally large specimens were found at Swaffham.

*Nodosaria tenuicosta*, Reuss.

*Nodosaria tenuicosta*, Reuss, 1845, Verstein. böhm. Kreidef. pt. i. p. 25, pl. xiii. figs. 5, 6; Chapman, 1893, Journ. R. Micr. Soc. p. 594, pl. ix. figs. 19, 20.

This species is rare at Swaffham.

*Nodosaria prismatica*, Reuss.

*Nodosaria prismatica*, Reuss, 1860, Sitzungsab. d. k. Ak. Wiss. Wien, vol. xl. p. 180, pl. ii. fig. 2; Chapman, 1893, Journ. R. Micr. Soc. pp. 594, 595, pl. ix. fig. 21.

Rare and small at Swaffham.

*Nodosaria orthopleura*, Reuss.

*Nodosaria orthopleura*, Reuss, 1862, Sitzungsab. d. k. Ak. Wiss. Wien, vol. xlvi. p. 89, pl. xii. fig. 5; Chapman, 1893, Journ. R. Micr. Soc. p. 595, pl. ix. figs. 22, 23.

Two fragments only from the Cambridge Greensand of Swaffham.

VIII.—*The Land Isopoda of Madeira.*

By Canon A. M. NORMAN, M.A., D.C.L., LL.D., F.R.S., &c.

[Plate VI. figs. 1-4.]

DURING a visit to Madeira last year I collected a few Crustacea Isopoda Terrestria. M. A. Dollfus has kindly examined for me some which I was unable to determine, and among them he found one species which he regards as "new." As

this species must be described, I propose along with that description to give a list of the other species as yet known to inhabit Madeira.

*Ligia italica*, Aud. & Sav.

Among rocks about high-water mark ; common.

*Armadilloniscus tuberculatus*, A. Dollfus.

1889. *Armadilloniscus tuberculatus*, A. Dollfus, "Liste supplémentaire d'Isopodes des Açores," Revue Biol. du France, p. 392.

Two specimens of this species recently described from types procured by Lieut. Chaves in the Azores were found by me among stones below high-water mark at Gorgulho, near Funchal.

*Lucasius scitus*, Budde-Lund (= *Porcellio scitus*, Budde-Lund).

Two specimens from Madeira are in Uljanin's collection (*vide* Budde-Lund).

*Lucasius Normani*, A. Dollfus, sp. n. (Pl. VI. figs. 1-4.)

This new species has been submitted to M. A. Dollfus, who has decided that it is not described, and has sent me the following description, together with the figures which illustrate it:—

"Body oblong, not broad, moderately convex, covered with granulations, especially on the earlier segments; dorsal surface finely setiferous throughout. Cephalon having the lateral frontal lobes rounded; central lobe well developed, triangular, rounded, the summit blunt. Epistome a little convex, but without any true median tubercle. Eyes with fourteen ocelli. Exterior antennæ equalling the length of half the body; the flagellum almost as long as the preceding joint, its first articulation half as long as the terminal. Posterior margin of the peræon having a slight lateral sinuosity at the sides. Pleon with the lateral processes well developed; the first pleopods in the male with the exopodite broader than long and somewhat obtuse. Pleotelson much longer than broad, with the sides slightly incurved and the extremity subobtuse. Uropods having the basal joint one third shorter than the pleotelson; exopodite lanceolate, short; endopodite reaching to or very slightly extending beyond the end of the pleotelson.

"Colour pale, with two longitudinal brown bands passing down the middle and two other bands on each side; uropods light red.

"Length 6 millim., breadth 2·8 millim.

"The form of the pleotelson and the absence of any true tubercle on the epistome lead us to regard this little species as a *Lucasius*, notwithstanding that the relative length of the antennæ shows more approach to *Porcellio* (sensu stricto). It differs from *Lucanius scitus*, B.-L., which is also found at Madeira, in the longer antennæ, the greater development of the median frontal lobe, the form of the pleotelson, and the general coloration, which is particularly characteristic."

The locality in which this species occurred was the Ilheo dos Embarcadouros, the islet at the eastern extremity of Madeira. This rocky islet has a most remarkable vegetation, being the home of a large number of pretty-flowered crassifolious plants. It is, moreover, the only known locality for three interesting varieties of land-mollusca—*Helix erubescens*, Lowe, var. *advenoides*, Paiva, *Helix polymorpha*, Lowe, var. *irrasa*, Lowe, and the recently described *Helix Watsoni*, J. Y. Johnson\*. This last beautifully sculptured *Helix* belongs to the group which includes *Helix tiarella*, Webbe, once living in most extraordinary profusion in Madeira, as evidenced in the fossil deposit at Caniçal, but now rare. It is a question whether this and other allies should not be united under the name *H. tiarella*, for although they do not intermingle either in locality or form, the remarkable sculpture is nearly alike in all. By a parity of reasoning to that which led Wollaston to unite a number of local forms as varieties under the name *H. polymorpha*, the species to which I refer might be aggregated under *H. tiarella*. I rediscovered the shell now named *H. Watsoni* in an extremely limited area of a few square yards only. Not being able to name the form, I showed it to my friend Mr. J. Y. Johnson, the eminent naturalist on the island. He recognized it, and brought out from his stores two or three specimens which had been found by Signor Moniz on the Ilheo dos Embarcadouros many years before. Mr. Johnson told me that Signor Moniz had no recollection of the exact spot on which he had taken it, and although it had been subsequently sought for by Signor Moniz and other friends of Mr. Johnson, it had not been again found. It was my good fortune during the two hours I spent on the islet not only to procure in plenty the species I had gone there to seek, and which are

\* "Description of *Helix Watsoni*, n. sp., from Madeira," by J. Y. Johnson, *Journal of Conchology*, vol. viii. 1897, p. 429.

in abundance, but also to meet with this little *Helix* and the *Lucasius* which is here described. My rediscovery of the *H. tiarella* ally led to its description by Mr. Johnson under the name *Helix Watsoni*.

*Metoponorthus scxfasciatus*, Budde-Lund.

I procured two specimens, which Dollfus, from their imperfect condition, doubtfully refers to this species, which had been previously found in Madeira by Dr. H. Brönniche.

*Porcellio maculipes*, Budde-Lund.

This has been taken twice in Madeira, and is unknown elsewhere. I did not meet with it.

*Porcellio levis*, Latreille.

Very abundant in the neighbourhood of Funchal, especially in gardens and among bananas.

*Porcellio dilatatus*, Brandt.

Specimens are in Dollfus's collection which were found by Dr. Nodier.

*Eluma purpurascens*, Budde-Lund.

This species is remarkable on account of its simple eye-lenses. I met with it up to heights of between 2000 and 3000 feet. Its range extends throughout the Madeiran province, it having been found both in the Canaries and Azores. It has also been met with in Portugal and Spain, and at Charente, France; but of this last locality Dollfus writes:—"où il a été certainement introduit."

*Armadillidium vulgare*, Latreille.

Very abundant round Funchal.

*Armadillidium tigris*, Budde-Lund.

Taken by Metschnikoff in Madeira and not known elsewhere (*Budde-Lund*).

*Armadillidium granulatum*, Brandt.

A specimen taken by Dr. H. Brönniche (*Budde-Lund*).

We thus have twelve Land Isopoda as known in Madeira. Such a list must be far from complete; and I trust that this short notice may lead others to investigate this portion of the Madeiran fauna. The Madeiran group is rich to a most remarkable degree in Land Mollusca, and it may prove to be so in Land Isopoda. With the exception of *Lucasius Normani* all the species I myself met with were collected close to Funchal. The whole of the rest of Madeira remains to be explored, and I am not aware that any carcinologist has even so much as set foot upon the islands of the Desertas and Porto Santo, which are so rich in Mollusca peculiar to them.

There are two remarkable features with respect to the Land Mollusca of the Madeiran Islands—first, that, as a rule, each form has a peculiarly restricted range in the islands, and, secondly, that out of 176 species, as recorded by Wollaston, only 25 occur in Europe.

The first of these features may be found to be paralleled hereafter among the Isopoda; but as regards the second, out of the twelve Isopoda in the preceding list, seven are European and only five are not so. However, it must be remembered that the species hitherto found have been mostly met with in the immediate neighbourhood of the seaport and from the most likely part of the island to contain introduced species. Of the five which are not European, *Armadillo-niscus tuberculatus* inhabits the Azores, while *Armadillidium tigris*, *Porcellio maculipes*, *Lucasius scitus*, and *Lucasius Normani* are, as far as is yet known, peculiar to Madeira.

The Land Isopoda have been more sought for in the Azores and Canaries than in Madeira, and thus from the former group of islands twenty species are known and from the latter nineteen.

#### EXPLANATION OF PLATE VI. FIGS. 1-4.

Fig. 1. *Lucasius Normani*, A. Dollfus, sp. n. Head and first segment of pereon.

Fig. 2. Ditto. Head seen from below.

Fig. 3. Ditto. Fifth segment of pleon, pleotelson, and uropods.

Fig. 4. Ditto. First pleopod of the male.

#### IX.—*British Land Isopoda.*

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[Plate VI. figs. 5-12.]

SINCE the publication of Bate and Westwood's 'History of British Sessile-eyed Crustacea,' 1869\*, the following papers

\* Dated 1868, but the last part, which included the Land Isopoda, was not published until 1869.